CLAIMS

What is claimed is.

1. A polymer memory device comprising:

a first electrode disposed on a substrate;

a first organic adhesion layer disposed over the substrate and over the first electrode;

a ferroelectric polymer structure disposed above and on the first organic adhesion layer;

a second organic adhesion layer disposed above and on the ferroelectric polymer structure; and

a second electrode disposed over the second organic adhesion layer.

2. The polymer memory device according to claim 1 further comprising:

a first protective film disposed between the first electrode and the ferroelectric polymer structure; and

a second protective film disposed between the ferroelectric polymer structure and the second electrode.

3. The polymer memory device according to claim 1, wherein layers between the electrodes further consist essentially of:

the first organic adhesion layer;

the ferroelectric polymer structure;

the second organic adhesion layer; and

an upper protective film disposed above and on the organic adhesion layer.

4. The polymer memory device according to claim 1, wherein the first and second organic adhesion layers have a thickness in a range from about 25 Å to about 200 Å.

5. The polymer memory device according to claim 1, wherein the first and second organic adhesion layers have a thickness in a range from about 30 Å to about 80 Å.

6. The polymer memory device according to claim 1, wherein the ferroelectric polymer structure further comprises:

a single, crystalline ferroelectric polymer layer disposed over the substrate.

7. The polymer memory device according to claim 1, wherein the ferroelectric polymer structure further comprises:

a spin-on ferroelectric polymer layer disposed over the substrate.

8. The polymer memory device according to claim 1, wherein the organic adhesion layers further comprise:

a hexamethyldisilazane composition.

9. The polymer memory device according to claim 1, wherein the ferroelectric polymer structure further comprises:

a first crystalline ferroelectric polymer layer disposed over the first organic adhesion layer;

a spin-on ferroelectric polymer layer disposed over the first crystalline ferroelectric polymer layer; and

a second crystalline ferroelectric polymer layer disposed over the spin-on polymer layer.

10. The polymer memory device according to claim 1, wherein the first and second organic adhesion layers exhibit a morphology characteristic of a spin-on formation process.

11. The polymer memory device according to claim 1, wherein the first and second organic adhesion layers exhibit a morphology characteristic of a Langmuir-Blodgett deposition process.

12. The polymer memory device according to claim 1, wherein the first organic adhesion layer exhibits a morphology characteristic of a spin-on formation process, and the second organic adhesion layer exhibits a morphology characteristic of a Langmuir-Blodgett deposition process.

13. A cross-point matrix polymer memory structure comprising:

a first aluminum or copper electrode disposed on a substrate;

a first refractory metal nitride or oxide protective film disposed above and on the first electrode;

a first organic adhesion layer disposed above and on the first refractory metal nitride or oxide protective film;

a ferroelectric polymer structure disposed over the substrate and the first protective film;

a second organic adhesion layer disposed above and on the ferroelectric polymer structure;

a second refractory metal nitride or oxide protective film disposed over the ferroelectric polymer structure; and

a second aluminum or copper electrode disposed above and on the second refractory metal nitride protective film.

14. The cross-point matrix polymer memory structure according to claim 13, wherein the organic adhesion layers comprise:

a hexamethyldisilazane composition.

15. The cross-point matrix polymer memory structure according to claim 13, wherein the organic adhesion layers have a thickness in a range from about 25Å to about 200 Å.

16. The cross-point matrix polymer memory structure according to claim 13:

wherein the organic adhesion layers further comprise a hexamethyldisilazane composition; and

wherein the ferroelectric polymer structure further comprises a polymer selected from $(CH_2\text{-}CF_2)_n$, $(CHF\text{-}CF_2)_n$, $(CF_2\text{-}CF_2)_n$, α-, β-, γ-, and δ-phases thereof, $(CH_2\text{-}CF_2)_n$-

$(CHF\text{-}CF_2)_m$ copolymer, α-, β-, γ-, and δ-phases of $(CH_2\text{-}CF_2)_n\text{-}(CHF\text{-}CF_2)_m$ copolymer, and combinations thereof.

17. A process of making a storage device comprising:

forming a first electrode on a substrate;

forming a first organic adhesion layer over the substrate and over the first electrode;

forming a ferroelectric polymer structure over the first organic adhesion layer;

forming a second organic adhesion layer above and on the ferroelectric polymer structure; and

forming a second electrode above the second organic adhesion layer.

18. The process according to claim 17, wherein forming a first organic adhesion layer over the substrate and over the first electrode is carried out by spin-on deposition.

19. The process according to claim 17, wherein forming a ferroelectric polymer structure over the first organic adhesion layer is carried out by spin-on deposition.

20. The process according to claim 17, wherein forming a second organic adhesion layer above and on the ferroelectric polymer structure is carried out by spin-on deposition.

21. The process according to claim 17, wherein forming a first organic adhesion layer and forming a second organic adhesion layer further comprise:

depositing at least one hexamethyldisilazane composition over the substrate.

22. The process according to claim 17, further comprising:

forming a first protective film over the first electrode; and

forming a second protective film above and on the second organic adhesion layer.

23. The process according to claim 17, wherein forming a ferroelectric polymer structure over the first organic adhesion layer further comprises:

forming a first crystalline ferroelectric polymer layer over the first organic adhesion layer;

forming a spin-on ferroelectric polymer layer over the first crystalline ferroelectric polymer layer; and

forming a second crystalline ferroelectric polymer layer over the spin-on polymer layer.

24. The process according to claim 17, wherein forming a first organic adhesion layer and forming a second organic adhesion layer each further comprises:

spinning on the adhesion promoter over the substrate for a period from about 5 seconds to about 20 seconds and in a rotational range from about 300 rpm to about 6000 rpm.

25. The process according to claim 17, wherein the ferroelectric polymer structure is selected from polyvinyl and polyethylene fluorides, polyvinyl and polyethylene chlorides, polyacrylonitriles, polyamides, copolymers thereof, and combinations thereof

26. The process according to claim 17, further comprising:

forming a first protective film above and on the first electrode; and

forming a damascene structure in the substrate from the first electrode and the first protective film.

27. A memory system comprising:

a substrate disposed on a physical interface for a host;

a memory article disposed on the substrate, the memory article comprising:

a first electrode disposed on a substrate;

a first organic adhesion layer disposed over the first electrode;

a ferroelectric polymer structure disposed over the first organic adhesion layer;

a second organic adhesion layer disposed over the ferroelectric polymer structure; and

a second electrode disposed above and on the second organic adhesion layer;

a signal interface for communication from the memory article to the host; and

a host.

28. The memory system according to claim 27, wherein the physical interface is configured to a host interface that is selected from a PCMCIA card interface, a compact flash card interface, a memory stick-type card interface, a desktop personal computer expansion slot interface, and a removable medium interface.

29. The memory system according to claim 27, wherein the organic adhesion layers further comprise:

a hexamethyldisilazane composition.